

CONFORMED DRAWING
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STRUCTURAL

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Contract Number WTC-945.071	Drawing Number S0-02	

I. GENERAL

A. CODES AND STANDARDS

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "BUILDING CODE OF THE CITY OF NEW YORK" MOST RECENT EDITION, AND WITH THE REGULATIONS OF ALL GOVERNMENTAL AGENCIES WHICH HAVE JURISDICTION IF THE PARTY WHEREAFORE IS A PRIVATE CORPORATION.
2. WHERE MORE STRINGENT, THE FOLLOWING CODES, STANDARDS AND SPECIFICATIONS, LATEST EDITION AND REVISION, SHALL APPLY TO THE WORK ALL AS MODIFIED HEREIN OR BY BUILDING CODE:
 - a) LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC SPECIFICATION).
 - b) CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC CODE). SECTIONS 6, 7, 8 AND 10, ONLY, SHALL APPLY TO THE WORK, EXCEPT AS MODIFIED IN THIS SPECIFICATION. THE REMAINDER BEING SPECIFICALLY EXCLUDED.
 - c) STRUCTURAL WELDING CODE - STEEL, AISC/AWS D1.1 (AWS D1.1).
 - d) STRUCTURAL WELDING CODE - SHEET STEEL, AISC/AWS D1.3 (AWS D1.3).
 - e) SPECIFICATIONS FOR STRUCTURAL JOINTS USING A572/A575 OR A510 BELTS, ACCEPTED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
 - f) SYMBOLS FOR WELDING AND NONDESTRUCTIVE TESTING, AWS A2.4.
 - g) STRUCTURAL WELDING CODE - REINFORCING STEEL, AWS D1.4 (AWS D1.4).
 - h) SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, BY THE AMERICAN IRON AND STEEL INSTITUTE.
3. A) "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318.
- 3.1) A) "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315.
- 3.2) REFERENCE DOCUMENTS: TO THE EXTENT THAT THE BEST QUALITY OF WORK IS PROVIDED, WORK SHALL CONFORM TO THE FOLLOWING, PROCEDURES OR RECOMMENDATIONS LISTED BELOW, LATEST EDITION AND REVISION, WHERE PROVISIONS OF THE BUILDING CODE, THESE CONTRACT DRAWINGS, OR CODES, STANDARDS AND CODES DO NOT PROVIDE MORE RESTRICTIVE OR PROVIDE INCREASED QUALITY. THE COMBINATION OF PROVISIONS, EXAMPLES, PROCEDURES AND RECOMMENDATIONS WHICH PROVIDE HIGHER QUALITY AND BUILDING CODE CONFORMANCE SHALL CONTROL THE WORK.
- 4.1) MANUAL OF STEEL CONSTRUCTION, LRFD, FIRST EDITION, BY AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC MANUAL). CONTRACTOR SHALL KEEP AT LEAST ONE FULL COPY IN THE FIELD OFFICE AT ALL TIMES.
- 4.2) DETAILING FOR STEEL CONSTRUCTION, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
- 5.1) SECC STEEL STRUCTURES PAINTING MANUAL, VOLUME 1, AND VOLUME 2, BY STEEL STRUCTURES PAINTING COUNCIL.

1. DIVISIONS

1. TAKEN FROM THE ORIGINAL DESIGN DOCUMENTS AND MAY NOT BE USED TO REPRESENT THE ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PERTAINING TO EXISTING CONDITIONS BY INSPECTION AND MEASUREMENT AT THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF HIS WORK.
2. IT IS INTENDED THAT ALL MEMBERS BE FABRICATED AND ERECTED FREE OF SHOP AND FIELD SPACES WHICH ARE NOT SPECIFICALLY SHOWN IN THE CONTRACT DRAWINGS. IF FIELD SPACES ARE INDICATED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FIELD SPACES LOCATIONS FOR ENGINEER'S ACCEPTANCE. WHERE FIELD SPACES ARE ACCEPTED, SPACES SHALL BE SHOWN IN THE SHOP DRAWINGS OF THE FIELD MEMBERS.
3. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRESPONDENCE OF DIMENSIONS AND QUANTITIES AND FOR THE FITTING TO OTHER WORK. FOR WORK TO BE CONFIRMED AND THE MATERIALS TO BE USED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FABRICATION PROCEDURE OR TO THE MEANS, METHODS, TOOLS, EQUIPMENT, AND PERSONNEL TO BE USED IN CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION WITH THE WORK OF ALL OTHER TRADES. THE VERIFICATION OF THE CONFORMANCE OF THE WORK WITH THE CONTRACT DRAWINGS, FROM PLANS AND SPECIFICATIONS, AND IN THE FIELD IS THE CONTRACTOR'S SOLE RESPONSIBILITY. THE ENGINEER'S REVIEW OF THE CONTRACTOR'S WORK DOES NOT RELIEVE CONTRACTOR FROM THESE RESPONSIBILITIES.
4. SPRAYED FIREPROOFING: PRIME/PAVE SPRAYED FIREPROOFING AS REQUIRED UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL, ON CONTRACT DRAWINGS, APPLY SPRAYED FIREPROOFING TO ALL ACCEDED STEEL, TO ALL EXISTING STEEL WHERE SPRAYED FIREPROOFING IS INDICATED, AND TO ALL NEW STEEL REQUIRED BY THIS CONTRACT, AND AS DIRECTED BY THE ENGINEER. SPRAYED FIREPROOFING SHALL BE MONITORED BY M.R. GAGE COMPANY AND SHALL BE SUBJECT TO THE FOLLOWING:

ONLY SM

- CORRECTIONS NOTED - RESUBMISSION NOT REQUIRED" MAY BE USED BY THE CONTRACTOR TO INDICATE THAT THE CORRECTIONS ARE MARKED "MADE CORRECTIONS NOTED - REQUIRED". SHALL BE CORRECTED AND/OR COMPLETED AS REQUIRED AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. THE CONTRACTOR SHALL REPEAT THE NUMBER OF TIMES REQUIRED TO ACHIEVE THE "MARK NO EXCEPTION MARK" OR "MADE CORRECTIONS NOTED - RESUBMISSION NOT REQUIRED".
2. THE CONTRACTOR SHALL NOTE THAT THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS ONLY FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND FOR INFORMATION GIVEN IN THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ERRORS DETECTED DURING THE REVIEW WILL BE NOTED IN THE SHOP DRAWINGS AND RETURNED TO THE CONTRACTOR UPON COMPLETION OF THE REVIEW. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETENESS AND ACCURACY OF THE CONTRACTOR'S SHOP DRAWINGS. ACCEPTANCE OF SHOP DRAWINGS, INCLUDING THE REVIEW, DOES NOT RELIEVE THE CONTRACTOR FROM THE SOLE RESPONSIBILITY TO PROVIDE MORE COMPREHENSIVE STRICTLY TO THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROVIDE ENGINEERING CALCULATIONS TO THE EXTENT NECESSARY TO ASSIST IN THE CONTRACTOR'S CALCULATIONS HAVE BEEN COMPLETELY PREPARED.
- ENGINEERING CALCULATIONS PERFORMED BY ENGINEER AND PROVIDED TO CONTRACTOR MAY BE REPRESENTATIVE OF MANY SIMILAR CONDITIONS AND SHOULD NOT BE CONSTRUED BY CONTRACTOR AS APPLYING TO ONE UNIT OR ONE CONDITION ONLY.
3. SHOULD ENGINEER'S MARKS OR CORRECTIONS BE MADE IN ANY SHOP DRAWING THAT WOULD OR COULD RESULT IN INCORRECT FIT OF ANY PART OR RESULT IN INSUFFICIENT STRENGTH OR STABILITY OF THE STRUCTURE, THE CONTRACTOR SHALL NOTIFY IN WRITING SO AS TO EXPEDITE THE REQUIRED CORRECTION OR REWORK. NOTIFICATION, REWORK, AND CORRECTION MUST BE PROMPT AND IMMEDIATE NOTIFICATION SHALL RESULT IN RESPONSIBILITY FOR THE INDIRECT MARK OR CORRECTION BEING THE CONTRACTOR'S.

PRO

- A. PROVIDE AND PLACE BRACING AND SHORING AS NEEDED. SUPPORT STRUCTURE TO REMAIN AS NECESSARY TO PREVENT DAMAGE OR UNACCEPTABLE DEFLECTION. KEEP ALL BRACING AND SHORING IN PLACE DURING NEW CONCRECTAL STEEL AND CONCRECT CONSTRUCTION AND UNTIL NEW CONCRETE ACHIEVES 80 PERCENT OF DESIGN STRENGTH.
- B. SAWCUT AND REMOVE CONCRETE TO TRUE SMOOTH LINES TO THE EXTENT SHOWN IN THE CONTRACT DRAWINGS AFTER INSTALLATION OF ALL ADDED BEAMS AND REINFORCING. REMOVE EXCESS CONCRETE AND REINFORCING STEEL DESIGNATED TO REMAIN. JOINTS BETWEEN EXISTING CONCRETE AND NEW CONCRETE SLAB CONSTRUCTION SHALL BE LEFT CLEAN, ROUGH, AND ESSENTIALLY VERTICAL.
- C. REPAIR STEEL BEAM CUTS SHALL BE NEAT, SMOOTH, AND TRUE TO LINE. REPAIR EXCESS GAS BURNING SPATTERS AND GOOES BY NECESSARY GRINDING AND GRINDING.

1. GENERAL

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- PROVIDE THE INDICATED TENSILE STRESS IN T.S. OF 40 MPH/IN.
YIELD STRESS IN T.S. OF 40 MPH/IN. AS SPECIFIED SELECTED
FROM STEELS PERMITTED BY THE SPECIFICATIONS.
- ALL CONNECTION PLATES AND ANGLES SHALL BE PY 36 UNLESS
NOTED OTHERWISE.
- PIPES SHALL BE PY 46 (ASTM A531).
TUBES SHALL BE PY 46 (ASTM A500).
2. UNLESS SPECIFICALLY NOTED TO THE CONTRACT, ALL BOLTED
CONNECTIONS SHALL BE MADE WITH SLIP-CRITICAL, A193 OR
A590 BOLTS. THE MINIMUM NUMBER OF ROWS OF BOLTS FOR
BRAZED CONNECTIONS SHALL BE BASED ON BEAM DEPTH AS
TABULATED IN THE TABLE BELOW. NOTING NO REDUCTION IS
PROVIDED IN THE CONTRACT DRAWINGS, OR UNLESS NOTED
OTHERWISE, THE CONNECTION SHALL BE PROPORTIONED TO CARRY
THE DESIGN LOAD.

BOLTS ARE LIMITED TO THE FOLLOWING DIAMETERS AND GRADES AND MAY BE SHOWN IN THE CONTRACT DRAWINGS IN AN APPROXIMATE MANNER.

ABBREVIATED

3/4" - A325 SC	3/4" Ø
7/8" - A325 SC	7/8" Ø
1" - A325 SC	1" Ø
1 1/8" - A390 SC	1 1/8" Ø

3. ALL FORCES SHOWN IN STRUCTURAL DRAWINGS AND DETAILS ARE FACTORED FORCES, UNLESS OTHERWISE NOTED.
4. END REACTIONS AND/OR DETAILS ARE SHOWN THUS:

V4. Hg INDICATES CONNECTION DETAILS PROPORTIONED

FOR THE GIVEN REACTIONS. V_u = VERTICAL REACTION AND H_u = HORIZONTAL REACTION (AXIAL LOAD IN BEAMS) IN KIPS. WHERE ONLY

Mr. [redacted] and Mr. [redacted]

INDICATES A MOMENT CONNECTION. THE FULL MOMENT CAPACITY OF THE BEAM SHALL BE DEVELOPED.

UNLESS OTHERWISE NOTED.

INDICATES A PERTINENT DETAIL AS SHOWN
IN DRAWING S2-05 OF THIS DOCUMENT.
WHERE REACTIONS ARE INDICATED, THE

CONNECTION SHALL BE PROPORTIONED AS PROVIDED ABOVE.

5. AT CONTRACTOR'S OPTION, CONNECTIONS MAY BE PROPORTIONED BASED ON THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN WITH EDITION 1970-ED REACTIONS FOR ASD DESIGN SHALL BE 0.75 TIMES THE FACTORED REACTIONS GIVEN IN THE DRAWINGS. DUE TO VARIATIONS IN LOADS, THE FACTORED REACTIONS MAY BE CONSERVATIVE IN SOME CASES; THEREFORE, SOME CONNECTIONS PROPORTIONED PER ASD MAY BE MORE CONSERVATIVE THAN IF PROPORTIONED PER LRFD.
6. REINFORCING SHALL BE PROVIDED TO BEAMS AT CONNECTIONS WHERE CUTS HAVE REDUCED THE SHEAR OR MOMENT CAPACITY BELOW THAT REQUIRED TO SUSTAIN THE REACTIONS. FLANGES AND WEBS SHALL BE REINFORCED TO MAINTAIN THE LOCAL CAPACITY TO SUSTAIN CONNECTION LOADS IS INADEQUATE.
7. ELECTRODES, FLUX AND SHIELDING GAS SHALL PROVIDE PHYSICAL PROPERTIES AFTER WELDING EQUIVALENT TO OR BETTER THAN E7018 LOW HYDROGEN ELECTRODES.
8. CAMBER WHERE REQUIRED IS INDICATED BY "C" IN PLANS, FOLLOWED BY THE ORDINATE, IN INCHES. WHERE NO CAMBER IS INDICATED, MEMBERS SHALL BE FABRICATED AND PLACED WITH NATURAL CAMBER UP.
9. PROVIDE 5/16 INCH THICK OR THICKER SHELF ANGLES AT COLUMNS, WALLS AND BEAMS AS REQUIRED TO PROVIDE END AND SIDE DECK SUPPORTS.
10. DOUBLE END MEMBERS SHALL BE CONNECTED IN ACCORDANCE WITH THE DESIGN OF THE AISC OPTION FOR END CONNECTIONS.

11. FILLET WELDS ON GUSSET PLATES, SEATED CONNECTIONS AND OTHER PLATE EXTENSIONS SHALL BE RETURNED AROUND THE EDGES OF THE PLATE FOR PLATES EXPOSED TO WEATHER.
12. ERECTION AIDS AND DEVICES ARE NOT SHOWN HEREIN. THE DETAILED OF THESE DEVICES IS THE RESPONSIBILITY OF CONTRACTOR.

1. GENERAL

- ARE INTENDED TO DEMONSTRATE THE WAY THAT CONTRACTOR SHALL CONSTRUCT AND FINISH EACH OF THE WORKS SHOWN ON THE CONTRACT DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL NECESSARY PERMITS FOR THE WORKS. CONTRACTOR WISH TO USE THESE DRAINAGE AS A PART OF THE CONSTRUCTIONS GIVEN BY GRANT PERSONNEL FOR THE ACCOMPLISHMENT OF THE WORK.
2. ERECTION DRAWINGS SHALL SHOW CLEARLY THE SIZE, GRADE AND LOCATION, BOTH IN PLAN AND IN ELEVATION, OF EACH MEMBER. THE ENTIRETY OF THE INFORMATION CONTAINED IN THE ERECTION DRAWINGS MAY BE USED FOR THIS PURPOSE. IN ADDITION TO THE ABOVE INFORMATION, THE ERECTION DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:
- a. ERECTION DRAWINGS SHALL CONTAIN (FOR EACH PIECE) THE MEMBER NAME, THE LOCATION, SIZE AND REINFORCING OF EACH MEMBER, THE BEAM OR GIRDER NUMBER, THE BEAM OR GIRDER SLOPE, THE ELEVATION OF THE WORK POINT OF BOTH

a) SHOR
DFT

3. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS AND COMPLETE DETAILS OF STRUCTURE. AT AN APPROPRIATE SCALE, ALL WORK TO BE PROVIDED. SHOP DRAWINGS SHALL BE ACCURATELY DIMENSIONED AND SHALL BE NOTATED CLEARLY.
4. SIZE AND GRADE OF STEEL FOR EACH COMPONENT PART OF THE STRUCTURE SHALL BE INDICATED CLEARLY IN SHOP DRAWINGS. ROLLED SHAPES, PLATES, AND OTHER COMPONENTS SHALL BE IDENTIFIED BY USING THE STANDARD DESIGNATIONS USED IN AISC'S DETAILING HANDBOOK FOR STEEL CONSTRUCTION.
5. SYMBOLS, WELDS AND NONDESTRUCTIVE TESTS SHALL BE INDICATED BY USING SYMBOLS IN ACCORDANCE TO AISC 3.08 SYMBOLS FOR WELDING AND NONDESTRUCTIVE TESTING WHERE NECESSARY FOR CLARITY. INDICATE WELDING PROCEDURE DESIGNATION OR OTHER DATA IN THE TAIL OF THE WELDING SYMBOL.
6. DETAIL IN ACCORD WITH AND TO ACCOMMODATE CONTRACTOR'S FIELD MEASUREMENTS OF SUPPORTING AND ADJOINING CONSTRUCTION. DO NOT FABRICATE BEFORE ACCEPTED SHOP DRAWINGS HAVE BEEN RETURNED TO CONTRACTOR.
7. INDICATE CLEARLY THE GRADE, SIZE AND NUMBER OF BOLTS THE TYPE, NUMBER, POSITION, DESIGNATION AND ORIENTATION OF EACH WASHER. THE BOLT TENSION INDICATING SYSTEM AND THE SIZE OF EACH WASHER SHALL BE SLUOTED OR WELDED. PROPORTION CONNECTION DETAILS TO ENSURE ADEQUATE WRENCH CLEARANCE FOR CORRECT BOLT TIGHTENING SEQUENCES.
8. ASTM A490 BOLTS MAY BE USED IN SLIP CRITICAL CONNECTIONS ONLY, NOT RELYING ON THE BEARING CAPACITY OF THE CONNECTION AND NOT TO CARRY DIRECT TENSILE LOADS.
9. REVIEW OF SHOP DRAWINGS WILL INCLUDE THE FOLLOWING:
 - a) MEMBER SIZE, GRADE, SPACING AND ELEVATION.
 - b) STRUCTURAL INTEGRITY OF CONNECTIONS.
 - c) PENETRATIONS, INCLUDING SIZE, AND LOCATION.
10. TEMPORARY, SHIPPING, HANDLING OR ERECTION LOADINGS WILL NOT BE CONSIDERED IN THIS REVIEW.
11. TEMPORARY WORK: DEPICT AND IDENTIFY TEMPORARY MEMBERS AND CONNECTIONS WHICH MAY BE REQUIRED FOR TEMPORARY CONSTRUCTION.

1. SIGNIFICANCE OF THE STUDY

- STEEL FURNISHED. COMPLY WITH ALL APPLICABLE PARTS OF THE SPECIFICATIONS AND BEYOND ORDER INFORMATION NORMALLY PROVIDED BY CONTRACTOR. THE MILL SHALL BE INSTRUCTED TO COAR-COLOR IN ACCORDANCE WITH ASTM A. AND TO MARK WITH HEAT NUMBER, SIZE, AND TYPE AND GRADE OF STEEL.
2. SUBMIT MATERIAL SPECIFICATIONS OF BOLTS, NUTS, WASHERS, RIPS AND THE LIKE FOR EACH PRODUCTION OF EACH SIZE OF EACH TYPE AND EACH SIZE OF FASTENER CORROSION AND FILLER MATERIAL FOR WELDING.
3. MILL TEST REPORTS SHALL STATE CLEARLY THE GOVERNING ASTM SPECIFICATION AND SHALL BE CERTIFIED AND SEPARATED BY CONTRACTOR AS COMPLYING IN ALL RESPECTS TO THAT SPECIFICATION.
4. MATERIAL PROVIDED IN ACCORD WITH THE ABOVE REQUIREMENTS MAY BE USED FOR THE FOLLOWING LOCAL TESTS: IN CASE OF CONTRADICTORY CONTRACTOR SHALL PERFORM TENSION, BEND AND CATCH OTHER TESTS AS ARE REQUIRED TO CORROBORATE COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS.
5. TESTS FOR CORROSION RESISTANCE. IN THE EVENT THAT STEEL CANNOT BE IDENTIFIED BY HEAT OR MILL MARKERS BUT IS ACCOMPANIED BY MILL ANALYSIS AND TEST REPORTS, SUCH STOCK MAY BE USED PROVIDED THAT ONE TENSION AND ONE BEND TEST IS MADE FOR EACH THIRTY TONS (33 TONS) OR FRACTION THEREOF. FOR EACH SIX-SIDED SURFACE OF EACH THIRTY TON OR FRACTION THEREOF, A CORROSION INSPECTION SHALL BE PERFORMED FOR SUCH MATERIALS. EACH PIECE OF STEEL NOT OF GRADE PY 36 SHALL BE TESTED AND STAMPED.
6. ALL STEEL THAT IS NOT PROPERLY IDENTIFIED OR WHOME SPECIFICATION IS SUBJECT TO QUESTION SHALL BE REJECTED.
7. STEEL PIPE AND TUBING SHALL HAVE NOT LESS THAN ONE TENSION, ONE 90° AND ONE FLAT TENSION TEST FOR EACH ONE THOUSAND LENGTHS OR FRACTION THEREOF, FOR EACH SIZE. FOR EACH THIRTY TON OR FRACTION THEREOF, ONE TENSION AND BEND TEST SHALL BE MADE FROM CATCHING SAME LONGITUDINALLY.
- D. NAMES OF MANUFACTURERS/SUPPLIERS. SUBMIT FOR APPROVAL THE NAMES OF THE FOLLOWING PRODUCTS: AND/OR PRODUCERS ALONG WITH CERTIFICATION OF THE PRODUCTS CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS:
1. PLATES AND SHOAPES
 2. BOLTS, NUTS AND WASHERS
 3. SHOP AND FIELD PAINT
 4. COATING OF MILLED SURFACES
 5. WELDING MATERIALS
 6. STUD SHEAR CONNECTIONS
 7. DEFORMED ANCHOR BARS
 8. SHIELDING GAS
- CERTIFICATION OF SHIELDING GAS. SUBMIT CERTIFICATION THAT SHIELDING GAS IS A WELDABLE GRADE HAVING A DEW POINT OF -40°F

F. MATERIAL IDENTIFICATION: ON COMPLETION OF THE WORK, CONTRACTOR SHALL SUBMIT AN AFFIDAVIT, CO-SIGNED BY THE APPROPRIATE SUBCONTRACTOR(S), ATTESTING THAT ALL MATERIALS AND PRODUCTS PROVIDED FOR THE WORK CONFORM TO THE APPLICABLE SPECIFICATIONS, STANDARDS, YIELD POINTS, GRADES AND THE LIKE REQUIRED BY THE CONTRACT DOCUMENTS.

1. FIELD

1. SKETCHES FOR PROPER FABRICATION AND INSTALLATION OF PIPE, SUBMIT WITH THESE SKETCHES INDICATING DISCREPANCIES FROM THE DRAWINGS. DESCRIBE THE WRITING AND WHERE APPLICABLE, BY SKETCHES PROPOSED CHANGES OF CONNECTIONS AND THEIR MAGNITUDES ARE THE RESPONSIBILITY OF CONTRACTOR
2. LAY OUT EACH PART OF THE WORK IN STRICT ACCORDANCE WITH THE ARCHITECTURAL STRUCTURAL MECHANICAL ELECTRICAL PLUMBING AND ALL OTHER DRAWINGS AND BE RESPONSIBLE FOR CORRECT LOCATION OF SAVE LAY OUT FROM AT LEAST TWO ESTABLISHED POINTS AND BE RESPONSIBLE INDIVIDUALLY CORRECT FOR LENGTH AND BEARING.
3. TEMPLATES FURNISH TEMPLATES AND LIMIT DRAWINGS FOR EXACT LOCATIONS OF ITEMS TO BE EMBEDDED IN CONCRETE WITH SETTING INSTRUCTIONS REQUIRED FOR INSTALLATION OF

1. THE TESTING ACT:

- OF EXAMINING CONTRACTOR'S QUALITY ASSURANCE PROGRAM FOR CONFORMANCE WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. CONTRACTOR ALONE IS RESPONSIBLE FOR THE ACHIEVING OF THE REQUIRED LEVEL OF QUALITY BOTH IN THE SHOP AND IN THE FIELD.
2. TESTING PERSONNEL MAY SAMPLE MATERIALS TAKEN FROM THE AS-FERRETED WORK.
- a) HIGH-TENSILE BOLTS, NUTS AND WASHERS OF EACH RANK AND GRADE, MAY BE SAMPLED AND TESTED IN ACCORD WITH ASTM PROCEDURES
 - b) COUPONS MAY BE TAKEN FROM STRUCTURAL STEEL SHAPES AND PLATES AND WELDS AND TESTED IN ACCORD WITH ASTM PROCEDURES
3. RESPONSIBILITIES AND DUTIES OF TESTING PERSONNEL
- TESTING PERSONNEL WILL BE REQUIRED TO PERFORM THE FOLLOWING WELDING AND HIGH-STRENGTH BOLTING IN ACCORD WITH THE PROVISIONS OF THIS SPECIFICATION
- a) BOTH TESTS AND INSPECTIONS WILL COMPLY WITH THE REQUIREMENTS OF THE BUILDING CODE AS ADOPTED BY THE JURISDICTION AND REGULATIONS OF THE BUILDING DEPARTMENT AND AS SPECIFIED HEREIN
 - b) TESTING PERSONNEL, UPON THE COMPLETION OF THE WORK WILL BE REQUIRED TO IDENTIFY IN WRITING, THAT THE WELDING AND HIGH-STRENGTH BOLTING HAS BEEN CORRECTLY PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE CONTRACT DRAWINGS AND SPECIFICATION
 - c) TESTING AND REPORTING WILL BE PERFORMED IN ACCORD WITH THE FOLLOWING REQUIREMENTS:
 - i) TESTING WILL BE PERFORMED IN ACCORD WITH THE PROVISIONS OF THE BUILDING CODE AS ADOPTED BY THE JURISDICTION FOR MECHANICAL TESTING OF STEEL PRODUCTS
 - ii) DYE PENETRANT TESTING WILL CONFORM TO THE PROVISIONS OF ASTM E141 AND ASTM E142
 - iii) MAGNETIC PARTICLE INSPECTION WILL CONFORM TO THE PROVISIONS OF ASTM E143 AND ASTM E144
 - iv) ULTRASONIC X RAY AND GAMMA RAY TESTING WILL CONFORM TO THE PROVISIONS OF ASTM E164 AND CHAPTER 4
 - d) TEST SPECIMENS SHALL BE TAKEN BY CONTRACTOR WHERE DIRECTED AND SHALL BE MARKED BY CONTRACTOR TO THE DIMENSIONS REQUIRED BY THE RELATED ASTM SPECIFICATION AND THE BUILDING CODE
 - e) CONTINUOUS INSPECTION OF HIGH TENSILE BOLTS WILL BE PERFORMED WHERE THE DESIGN IN ANY RANK OF BOLTS WILL BE REQUIRED TO FALL BELOW THE PROVED VALUE. ALL BOLTS IN THAT CATEGORY SHALL BE EXAMINED:
 - i) ALL BOLTS WILL BE VISUALLY EXAMINED FOR PROPER TIGHTENING
 - ii) ONE-HALF OF ONE PERCENT OF BOLTS WILL BE SELECTED AT RANDOM AND TESTED BY TENSILE AND IN ACCORD WITH THE PROVISIONS OF THE SPECIFICATION FOR STRUCTURAL STEELS DURING CONSTRUCTION AND AS REQUIRED
 - f) CONTINUOUS INSPECTION OF COMPLETE PENETRANT WHICH WILL BE PROVIDED USING ULTRASONIC AND DYE PENETRANT TESTS
 - i) ULTRASONIC TESTS WILL BE PERFORMED BY CERTIFICATED PERSONNEL TRAINED TO PERFORM SUCH TESTS AND WILL OPERATE THE EQUIPMENT WHILE EXAMINING THE WELDS AND WILL MAINTAIN RECORDS OF WELDS EXAMINED, DEFECTS FOUND AND DIMENSIONS OF EACH DEFECT
 - ii) INSPECTION INSTRUMENTATION WILL BE CALIBRATED IN ACCORD WITH ASTM E165
 - iii) WHERE THE REQUIREMENT FOR TENSILE TESTING SHALL BE TESTED AT AN INITIAL RATE OF 10% IN ORDER TO AUTHENTICATE THE QUALIFICATIONS OF EACH WELDER AND EACH WELDING OPERATOR, WHERE THE REJECTION RATE IS FOUND TO BE LESS THAN 5% OF THE WELDS TESTED, THE FREQUENCY OF TESTING MAY BE REDUCED TO 25% WHERE THE RATE OF REJECTION INCREASES TO 5% OR ABOVE, THE INSPECTION RATE WILL INCREASE OF AUTOMATICALLY TO 100% UNTIL THE DEFECT RATE IS REDUCED TO LESS THAN 5%. PERCENTAGES WILL BE CALCULATED FOR EACH WELDER
 - g) WHERE ULTRASONIC INDICATIONS ARISING FROM THE WELD ROOT CAN BE INTERPRETED AS EITHER A WELD DEFECT OR A BACK-UP BAR, THE BAR SHALL BE REMOVED BY THE CONTRACTOR AND BACK WELDING OPERATOR. WHERE THE WELD WILL THEN BE REWELDED, THE WELDER SHALL BE INDICATED, WHERE NO DEFECT IS FOUND, WILL NOT BE INDICATED AGAINST THE WELDER'S REJECTION RATE
 - h) ALL MATERIAL STRESSED TRANSVERSE TO THE GRAIN BY WELDS LOCATED WHERE STRESS IS APPLIED TO EITHER SIDE OF THE WELD, WILL BE TESTED ULTRASONICALLY FOR LAMINATIONS. TESTING WILL BE IN ACCORD WITH ASTM A578, LEVEL 21
 - i) APPROXIMATELY 25% OF BUTT WELDS ACCUMULATED IN THE SHOP WILL BE TESTED IN THE FIELD. RETESTING WILL NOT TAKE PLACE UNTIL THE WELDS ARE NOT LESS THAN 5 DAYS OLD. FURTHER TESTING OF BUTT WELDS OF MATERIAL STRESS TRANSVERSE TO THE GRAIN WILL BE RETESTED FOR LAMINAR TEARING
 - j) ALL COLUMN SPICES AND OTHER COMPRESSION JOINTS THAT DEFLECT UPON CONTACT BEARING AFTER ALIGNMENT WILL BE TESTED FOR CONFORMANCE WITH THESE GENERAL NOTES.

